

## Method and System for an Electrically and Thermally Enhanced Die-up Ball Grid Array

### *Abstract*

5 An electrically and thermally enhanced die-up tape substrate ball grid  
array (BGA) package and die-up plastic substrate BGA package are described.  
A substrate that has a first surface and a second surface is provided. The stiffener  
has a first surface and a second surface. The second stiffener surface is attached  
10 to the first substrate surface. An IC die has a first surface and a second surface.  
The first IC die surface is mounted to the first stiffener surface. A plurality of  
solder balls is attached to the second substrate surface. In one aspect, a heat  
spreader is mounted to the second IC die surface. In another aspect, the stiffener  
is coupled to ground to act as a ground plane. In another aspect, the substrate has  
15 a window opening that exposes a portion of the second stiffener surface. The  
exposed portion of the second stiffener surface is configured to be coupled to a  
printed circuit board (PCB). In another aspect, a metal ring is attached to the first  
stiffener surface. In another aspect, wire bond openings in the stiffener are  
bridged by one or more studs.

A280-36.wpd  
1875.0200000